

Executive Summary

The 1990 Cranston-Gonzalez National Affordable Housing Act (NAHA) requires an independent actuarial analysis of the economic net worth and soundness of the Federal Housing Administration's (FHA's) Mutual Mortgage Insurance (MMI) Fund. This report presents our findings with respect to this required analysis for fiscal year (FY) 2005.

The primary purpose of our review was to estimate

- the *economic value* of the MMI Fund, defined as the sum of existing capital plus the net present value of the current books of business, and
- the current and projected *capital ratio*, defined as the economic value divided by the total insurance-in-force (IIF).

A. Status of the Fund

NAHA mandated that the MMI Fund achieve a capital ratio of at least 2 percent by FY 2000 and beyond. The capital ratio of the Fund reached 2 percent in FY 1995 and has stayed above this mandated level ever since. This year, we estimated that the FY 2005 capital ratio increased to 6.02 percent from last year's 5.53 percent. We also estimated the FY 2012 capital ratio to be 6.62 percent. Exhibit ES-1 provides our estimates of the Fund's current and future economic values and capital ratios.

Exhibit ES-1

Projected MMI Fund Performance for FYs 2005 to 2012 (\$ Millions)						
Fiscal Year	Economic Value of the Fund ^a	Capital Ratio %	Volume of New Endorsements ^b	Insurance in Force ^c	Economic Value of New Book of Business	Investment Return on Fund Balances
2005	21,621	6.02	58,264	358,871	570	
2006	22,702	6.16	54,664	368,763	318	764
2007	24,130	6.40	54,965	377,235	499	929
2008	25,729	6.58	57,065	390,895	534	1,065
2009	27,434	6.70	60,973	409,701	486	1,219
2010	29,286	6.70	69,231	436,918	476	1,377
2011	31,361	6.66	79,308	470,685	523	1,552
2012	33,680	6.62	88,898	508,753	578	1,741

^a All values are as of the end of each fiscal year. The economic value for future years (FYs 2006 through 2012) is equal to the economic value of the Fund at the end of the previous year, plus the current year's interest earned on previous business, plus the economic value of the new book of business.

^b Based on Federal Housing Administration's 2005 projection.

^c Estimated based on the data extract on March 31, 2005.

In describing the capital ratio, NAHA stipulates the use of unamortized insurance-in-force as the denominator. However, "unamortized insurance-in-force" is defined in the legislation as "the remaining obligation on outstanding mortgages" – a definition generally understood to apply to amortized IIF. Following the convention of previous actuarial reviews, we continue to use the unamortized IIF in calculating the capital ratio. It is also instructive to consider the capital ratio based on amortized IIF, which is the basis the General Accounting Office has used in its previous reports on the status of the Fund during the 1990's. The estimated capital ratio using amortized IIF is 6.50 percent for FY2005 and 7.31 percent for FY 2012. Unless stated otherwise, all capital ratios mentioned in this report refer to the ratio computed using unamortized IIF.

We also subjected the Fund to stressful future economic scenarios (reported below) and found that the projected capital ratio in each case remained above 2 percent. **We therefore conclude that the MMI Fund has met and will continue to meet the mandate of the NAHA.**

B. Sources of Change in the Status of the Fund*Change in Economic Value from FY 2004 to FY 2005*

We estimate that the economic value of the MMI Fund is \$21.621 billion as of the end of FY 2005, which represents a decrease of \$0.356 billion over the economic value as of FY 2004 as reported in the previous year's Actuarial Review. Combining this 1.62 percent decrease in the estimated economic value of the MMI Fund with a 9.67 percent decrease in the unamortized IIF resulted in an increase in the capital ratio of 0.49 percentage points from 5.53 percent to 6.02 percent.

Current Estimate of FY 2005 Economic Value Compared with the Estimate Presented in the FY 2004 Actuarial Review

Our estimate of the FY 2005 economic value is \$2.809 billion lower than the economic value projected for FY 2005 in the FY 2004 Actuarial Review. The estimated FY 2011 capital ratio is 0.05 percentage points lower than that estimated in the FY 2004 Review. These differences are attributed to six changes:

- update for the actual origination volume during FY 2004,
- update for the actual termination experiences occurring during FY 2004,
- enhanced econometric models,
- updated economic forecasts by Global Insight, Inc. and the forecasted origination volume by FHA,
- updated assumption of the loss severity rates,
- the incorporation of performance difference among loans with various downpayment gift sources,
- the elimination of premium refund for most new loans.

Each of these changes had a significant impact on the estimated performance of the Fund, as follows:

- The significantly lower-than-expected origination volume in FY 2004 from the level forecasted in the FY 2004 Review reduced the FY 2005 economic value of the fund by \$0.403 billion.
- The deviation of the actual conditional claim and prepayment rates experienced during FY 2004 from those projected in the FY 2004 Review translates into a reduction of the FY 2005 economic value by \$0.155 billion.

- The enhancement of the multinomial logit model specifications introduced a reduction of the FY 2005 economic value by \$0.247 billion. The main enhancements implemented include the refined definition for the burnout effect and the incorporation of more MSA-level house price indexes to improve the accuracy of the measurement of the probability of negative equity variable. Additional macroeconomic variables such as MSA-level unemployment rates and payment shocks were tested but did not improve the performance of the econometric model.
- The updated economic forecasts of Global Insight, Inc. and the significantly lower origination volume forecasted by FHA translated into a decrease of economic value by \$0.137 billion. According to OFHEO, the national average house price growth rate between the second quarter of 2004 and the second quarter of 2005 was 9.36 percent. This is much higher than the 2.55 percent forecast by Global Insight, Inc. in August 2004 and applied in the 2004 Review. The increase in housing values during the last several quarters significantly improved the financial strength of the MMI Fund at the end of FY 2005. However, as the house price growth rate is forecasted to decrease from the current high level to a lower-than-average level during the next 3 years, performance of the FYs 2005 - 2007 books of businesses are expected to be less robust.
- The refinement of the loss severity rate assumption also lowered the FY 2005 economic value by \$0.184 billion. The new loss severity assumption is based on the average loss severity rates observed during FY 2000 to FY 2004 termination years by loan product types instead of an average for all loans.
- The most significant impact comes from the incorporation of the loan performance of various gift sources, causing a \$1.763 billion reduction of the FY 2005 economic value. FHA's database has tracked the size and the source of gifts toward downpayment assistance since 1996. Virtually all downpayment gifts prior to FY 2000 were funded by the borrower's relatives. However, starting FY 2000, there was a rapid increase in the share of loans with gift letters from nonprofit, religious or community entities. As of FY 2004, more than 18 percent of all MMI Fund endorsed loans received gifts from these non-profit organizations.

A recent HUD sponsored research report, "An Examination of Downpayment Gift Programs Administered by Non-Profit Organizations," investigated potential problems associated with loans with gifts from non-profit, religious, or community sources. HUD's internal analysis also suggested that these loans experienced claim rates up to three times higher than the otherwise identical loans with no gift. We independently verified this fact and found the higher claim rates exist in all gift sources except the relatives. As a result, we improved the multinomial logit model to incorporate this performance difference. Strong impact was shown in the performance of the most recent books of business, which have higher concentration in non-relative gift loans.

Moreover, as the future books of business are assumed to have similar composition as the most recent originations, the weak performance is expected to continue in all future originations. This caused the initial economic value and capital ratio of these books to be significantly lower than the norm observed in all past Actuarial Reviews. The projected capital ratio for FY 2011 was reduced by 1.35 percent due to this newly observed change in portfolio concentration.

- The policy that eliminated upfront premium refund for all loans endorsed after December 8, 2004 except for loans that are refinanced into another FHA insured loan increased the FY 2005 economic value by \$0.08 billion and the FY 2011 capital ratio by 0.21 percent.

Table ES-2 provides the details of the changes in the Fund's economic value between FY 2004 and FY 2005, including those attributable to these six changes.

Finally, Hurricane Katrina introduced additional uncertainty to the performance of the MMF Fund. Our preliminary estimate of the impact is that the FY 2005 Economic Value of the MMI Fund could be further lowered by three quarters of one billion dollars to about \$20.842 billion and the FY 2005 Capital Ratio lowered to 5.83%. However, since the national recovery plan is still very preliminary at the time of this Review, it is unclear that such losses would actually occur. As a result, the impact of Hurricane Katrina is excluded from the Base Case analysis of the FY 2005 Actuarial Review.

Exhibit ES-2

Summary of Changes in MMI Fund Estimated Economic Value Between FY 2004 and FY 2005 (\$ Millions)				
	Change in FY 2005 Economic Value	FY 2005 Economic Value	Change in FY 2011 Capital Ratio (%)	Corresponding FY 2011 Capital Ratio (%)
FY 2004 Economic Value Presented in the FY 2004 Review		\$21,977 ^a		
FY 2005 Economic Value Presented in the FY 2004 Review, Excluding the FY 2005 Book of Business:	\$731	\$22,708		
Plus: Forecasted Value of 2005 Book of Business Presented in the FY 2004 Review	\$1,722			
Equals: FY 2005 Economic Value Presented in the FY 2004 Actuarial Review		\$24,430		6.71%
Plus: a. Update Origination Volume in the FY 2004	-\$403	\$24,027	0.01%	6.72%
Plus: b. Update Actual Conditional Claim Rates and Conditional Prepayment Rates in the FY 2004	-\$155	\$23,872	-0.03%	6.69%
Plus: c. Change by switching to FY 2005 loan level multinomial logit econometric model	-\$247	\$23,625	1.67%	8.36%
Plus: d. Change due to updated economic forecast	-\$137	\$23,488	-0.46%	7.90%
Plus: e. Change by Loss Severity Assumptions for Six Products to FY 2005	-\$184	\$23,304	-0.10%	7.80%
Plus: f. Change by incorporating performance difference of loans with various gift sources	-\$1,763	\$21,541	-1.35%	6.45%
Plus: g. Change by new refund policy	\$80	\$21,621	0.21%	6.66%
Equals: Estimate of FY 2005 Economic Value	-\$2,809	\$21,621	-0.05%	6.66%

^a Economic value as the end of FY 2004.

Additional Comments

The estimates presented here reflect projections of events more than 30 years into the future. These projections are dependent upon a number of assumptions, including economic forecasts by Global Insight, Inc. and FHA, and the assumption that FHA does not change its policies regarding refunds, premiums, distributive shares, administrative expense accounting method and underwriting rules. To the extent that these or other assumptions are subject to change, the actual results will vary, perhaps significantly, from our current projections.

Estimation of the equations used for predicting prepayments and claims requires large amounts of loan level data. It takes several weeks to process the raw data before it can be used. In order to complete the Review within the limited timeframe required by OMB, we continued to adopt the convention of using partial-year data to estimate the picture for the entire FY 2005. As part

of this approach, we obtained a data extract from FHA that represented activities entered into the database by March 31, 2005. This data extract contained loan-level information on both the new endorsement characteristics and terminations due to prepayments, claims or other reasons. Although we have not audited this data source for accuracy, we have reviewed the integrity and consistency of the data supplied by FHA and believe it to be reasonable. Additionally, the information contained in this report may not correspond exactly with other published analyses that rely on FHA data compiled at a different time or obtained from other systems.

C. Impact of Economic Forecasts

The economic value of the Fund and its pattern of capital accumulation to FY 2012 depend on many factors. One of the most important factors is the nation's future economy during the remaining lifetime of FHA's books of business. We captured the most significant factors in the U.S. economy affecting the performance of the Fund's books of business through the use of the following variables in our models:

- 30-year home mortgage commitment rates
- Ten-year Treasury rate
- One-year Treasury rate
- Average growth rate of national house prices
- Dispersion of individual house price appreciation rates from the national average rate

The performance of FHA's books of business, measured by their economic value, is affected by changes in these economic variables. The base-case results in this report are based on Global Insight, Inc. forecasts as of May 2005 for interest rates and national average house prices, the house price growth rate dispersion estimates published by OFHEO, and additional dispersion parameters estimated by our research team. We considered three stress scenarios to assess the strength of the MMI Fund in sustaining difficult market situations: 1) low house price appreciation for three consecutive years, 2) low house price appreciation combined with high interest rates for three consecutive years and 3) higher loss severity rates on claimed mortgage loans. These three scenarios do not represent the full range of possible experiences, but provide variations from the base case that might reasonably be expected. They demonstrate the sensitivity of the analysis to reasonably stressful variations in economic conditions and hence provide insights into the capability of the MMI Fund to withstand difficult economic situations. The results of these sensitivity analyses of the Fund's performance are presented in Exhibit ES-3.

Compared to the base case, the estimated FY 2005 economic values under alternative scenarios could further decrease by \$2.92 billion, the estimated FY 2005 capital ratio could decrease by 0.81 percentage points to 5.21 percent, and the FY 2012 capital ratio could be reduced to 4.66 percent. These alternative scenario analyses suggest that the MMI Fund would continue to meet

the NAHA mandated 2 percent capital ratio through FY 2012 even under these stressful economic environments.

Exhibit ES -3

Projected MMI Fund's Capital Ratio Under Alternative Economic Scenarios				
Fiscal Year	Base Case	Low House Price Growth	Low House Price Growth & High Interest Rates	High Loss Rate
FY 2005 Economic Value	\$21,621	18,702	20,886	\$20,351
FY 2005 Capital Ratio	6.02%	5.21%	5.82%	5.67%
FY 2012 Capital Ratio	6.62%	5.00%	4.66%	5.82%

However, potential risks faced by future books of business are revealed by these sensitivity analyses. The initial economic value and the initial capital ratio of a few future books of business could become negative if any one of these three alternative economic scenarios becomes reality. HUD should consider conducting thorough research regarding its premium structure and the ongoing trend of its business concentration to avoid further deterioration of the quality of its future books of business.

D. Decrease in Market Share

The other important trend is that the total FHA originations of the FY 2005 book of business was 40 percent lower than was estimated in the FY 2004 Review, mostly driven by the continuous decline in FHA's market share during the last two years. FHA's market share, measured by number of loans endorsed by FHA vs. the total number of household during the same year, decreased from 12.18 percent in 2002 to an expected 3.77 percent in 2005. The lower volume of new books of business leads to the slower increase in both the economic value and the insurance in force of the MMI Fund. Because the impact on insurance in force is higher than that of the economic value, further decrease in new business volume tends to lead to rapid rising of the Fund's capital ratio.